G. John Lapeyre

Math/Physics/Statistical Modeling

Education

2001 **Ph.D.**, *Physics*, University of Arizona, Tucson. Title: *Random Walks on Fluctuating Lattices*.

Professional Experience

2017-2018 **Data Scientist**, *Invendium Ltd*, London/Barcelona.

- Implemented and deployed in production advert recommenders based on text analytics and on collaborative filtering via dimensional reduction of user-item matrix.
- Tools: Python *implicit* collaborative-filtering library; Python interfaces: RESTful, message queues, MySQL, Mongo; nginx/gunicorn/flask, Linux, git.

2015-2017 **Research Scientist**, *MHetScale project / CSIC – Spanish National Research Council*, Barcelona.

- Proposed and analyzed stochastic models of reactive transport in heterogeneous media: limit-theorems, asymptotics, stochastic simulation and parameter estimation in C and Julia.
- Published in leading journals. Gave talks at conferences.

2009-2015 **Research Fellow**, *ICFO — Institute of Photonic Sciences*, Barcelona.

- Led theory group in stochastic modeling of protein transport on cell membrane; Formulated, statistically simulated, and characterized models. Derived and interpreted asymptotics.
- Designed and optimized protocols for quantum entanglement distribution on complex networks; Characterized entanglement concentration analytically, numerically, and statistically.
- Published in high-impact journals; Invited to visit leading groups; Invited conference talks.

2007-2009 **Independent researcher in quantum information theory**.

- Designed and optimized entanglement protocols on complex networks and percolation models; Designed/coded numerical, Monte Carlo, and graph-theory algorithms. Designed/applied analytic techniques; Wrote quantum computing/information software packages.
- Published with Prof. Maciej Lewenstein and Prof. Jan Wehr in *Physical Review A*.

2001-2009 **Research engineer/scientist**, *Zetetic Institute and PM and AM Research*, Tucson.

- Designed/built/developed/mathematically modeled instrument to measure ultra-low impulse from laser ablation. Wrote all software: instrument control, data acquisition/analysis, UI; Supervised interns; Deployed instrument in production offsite; Grant reports and conference paper.

Software and Computational Competencies

- 200,000+ lines of code in C, C++, Julia, Python, Common Lisp, JavaScript, Perl, Mathematica, MATLAB, Fortran, PostScript, and other languages. Thousands of lines for each of: numerics, symbolics, interfaces/UI, visualization.
- Stochastic simulation; Statistics; Integration of quantum/classical dynamics; Numerical analysis; Symbolic language implementation; Event-driven UIs; Recommender systems; Parallel computing, OMP, and message passing.
- Open-source: Authored 30+ scientific packages; contribute to other software and to Julia base.

Communication

- Enthusiastic speaker/listener/facilitator in all professional settings. Enjoy every opportunity to give conference/technical/whiteboard talks.
- Natural Languages: *English*: Native; *German*: EU level B2; *Spanish*: Advanced; *French*: Intermediate; *Catalan*: Intermediate reading.

(+34) 691918760 • *john.lapeyre@gmail.com* • *johnlapeyre.com* • *jlapeyre*
john-lapeyre • *google scholar ID: 6R3bd5AAAAAJ* • *Julia Discourse profile*